

VTT process chemistry piloting for solving scale-up challenges

VTT Process chemistry pilot in Bioruukki, Espoo, Finland

Flexible research infrastructure, equipment and operation model

- Broad selection of pilot scale pressure reactors and separation devices
- Capability for safe handling of dangerous and flammable chemicals
- State-of-the-art measurements, data logging, and user interfaces enabling accurate and safe operation
- Skilled personnel with experience in wide range of research and industry related scale-up

Multimaterial platform for novel technology development and scale-up

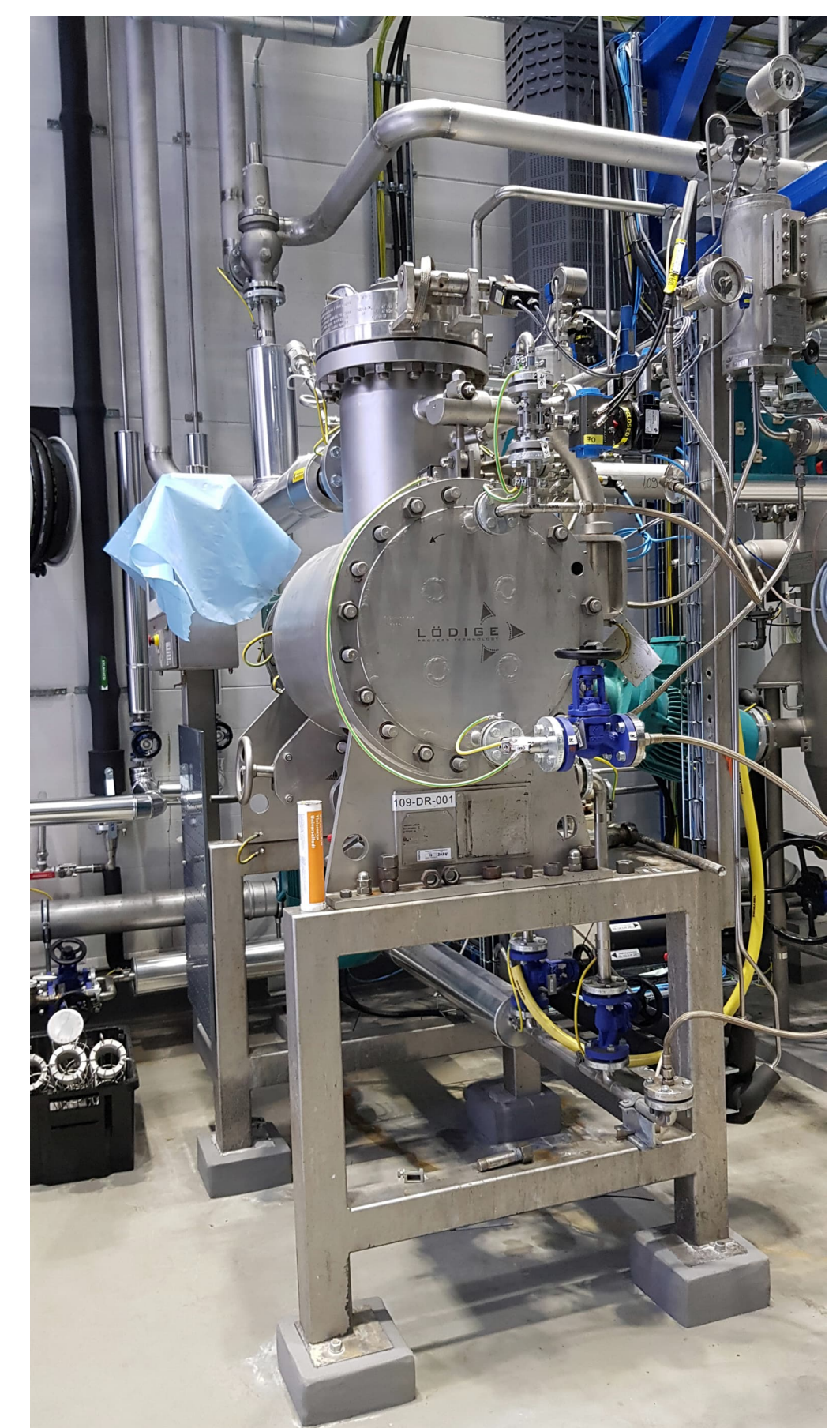
- Process scale-up support from laboratory to pilot scale
- High solid content processing in multistage batch reactors
- Polymerizations and advanced chemical synthesis
- Chemical recycling technologies
- Manufacturing of product samples
- Online measurements and analytical services
- Pilot facility allowing modification for on-demand equipment and process setups

Key pilot equipment enabling process scale-up in a safe testing environment

- Multi-purpose stainless steel reactors: 400 -1800 L, up to 50 bar and 250°C
- Multi-purpose glass lined reactors: 60, 160 and 500 L
- Bench scale high pressure reactors: 1-10 L up to 300 bar and 500°C
- Lödige multiphase reactors in several batch sizes: 5, 10, 130, 250, 600 L up to 25 bar/20 mbar and 250 °C
- Powder dry mixing unit, grinders
- Separation with decanter centrifuges and disc stack separators
- Filtration by Nutsche- pressure filters and other on-demand filtration and membrane devices
- Counter current extraction unit, glass columns



Fully EX proof multimaterial pilot platform with reactors and separation devices to allow flexible process demonstration and scale-up



Multistage processing in batch, high speed reactors allowing step wise scale up with fixed parameters from 5 L to 600 L scale. Typically used for